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A Case of Intraspecific Poisoning in the Great Basin Rattlesnake

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In spite of Weir Mitchell's simple but conclusive experiments (1861, p. 61-63) which showed that timber rattlesnakes (*Crotalus horridus*) are not immune to their own venom, a widespread notion to the contrary has persisted about poisonous snakes in general. This erroneous concept has been supported by occasional observations of self-inflicted bites, or fortuitous bites from the same or related species, in which there were no apparent reactions.

During recent years observations bearing upon this subject have been reported by Gloyd (1933), Wooster (1933), and Conant (1934). Nichol, Douglas and Peck (1933) showed that black-tailed rattlesnakes (*C. molossus*) and diamond rattlesnakes (*C. atrox*) may be killed, by self-inflicted bites and by injections of venoms of the same species. More recently Keegan, and Andrews (1942) injected venoms of *Agkistrodon*, *Sistrurus* and *Crotalus* into several species of snakes, including representatives of boid, colubrid and crotalid genera. Varying degrees of resistance were indicated but no actual immunity was demonstrated. Critical appraisal of these experiments is not intended here, but the general inference is that in some species resistance to venom poisoning is very high when compared to that of birds and mammals. This seems to apply not only to genera which sometimes feed upon poisonous snakes (*Lampropeltis*, *Coluber*, *Masticophis*) but also to some which do not (*Pituophis*, *Thamnophis*, *Natrix*). The determination of relative resistance of different groups of snakes to venom poisoning requires more careful experimentation and a standardized technique.

The following case is of interest because it appears to be the first observation of intraspecific poisoning in the Great Basin rattlesnake (*C. viridis lutosus*) and because of the circumstances of its occurrence.

About 4:00 P.M. on October 20, 1945, Mr. Bevan was standing in front of an exhibit case containing two Great Basin rattlesnakes in the reptile house

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of the Lincoln Park Zoological Gardens in Chicago. One of these snakes was considerably darker than the other. This difference in coloration enabled the observer to distinguish the two individuals. The darker one, *A*, was lying quietly in one corner of the case, head facing the glass. The lighter one, *B*, came forward from a far corner and touched the posterior part of *A* in passing. *A* drew away slightly, whereupon *B* struck the other somewhere in the posterior half of the body. *A* immediately whipped around and bit *B*, and two or three more strikes were interchanged. In the course of this, *B* was bitten on the head and the fang of the aggressor hung for a moment. They then pulled apart and *A* stayed in place while *B* moved to the other side of the case and became quiet. After a little *A* moved to the back of the case and climbed upon a ledge, behaving quite normally—as if unhurt in any way. In the course of half an hour *B* began to show signs of distress and a noticeable swelling appeared on the left side of the head. The swelling soon involved the whole head, extending down the neck for about an inch, but was more pronounced on the left side.

A died during the night.

About 11:00 A.M. the following day the swelling in *B* was still evident and the snake was in some distress, as indicated by nervous twitching in the posterior half of the body. This twitching occasionally involved greater movement and a partial turning, or half-turning, of the body. Three hours later the swelling had abated somewhat and the snake seemed normal otherwise, voluntarily changing its position in the case from time to time. This snake completely recovered, took food at reasonable intervals, and lived in apparent good health for almost four months.

Through the courtesy of R. Marlin Perkins, director of the gardens, and B. R. Tschambers, senior keeper in the reptile house, we were allowed to make a post-mortem examination of snake *A*. There was considerable extravasation of blood in the head region, most pronounced in the left temporal muscles. Apparently the fangs of *B* had struck in the dorsal portion of the posterior temporal muscle and the venom gland. Extravasation also showed on the right side of the neck, especially on the skin. Another bite was evident toward the posterior part of the body in the vicinity of the gall bladder. Two fang marks were visible on the skin and extravasation was especially marked in the body wall and the fat bodies. The gullet above the stomach was full of uncoagulated blood. The lung contained relatively little blood and the stomach and intestine were practically clean.

From these observations, as well as those recorded in papers mentioned above, it appears that instances in which poisonous snakes have bitten themselves, or been bitten by other snakes, and have survived with little or no evi-

dent effect, may be logically explained by one or another of the following assumptions: (a) that the potency of the venom may have been modified by the physiological condition of the donor; (b) that the physiological condition of the recipients was such that the venom was relatively ineffective; or (c) that they received an amount of venom which the individual could tolerate. If the last is true, survival may have been a consequence either of a sublethal amount of venom, or the site of the bite precluded rapid absorption. There is little doubt that the site of the bite is one of the chief factors in determining the nature of the reaction.

Among captive rattlesnakes of the same or even different species a hostility manifest in an unprovoked attack is most unusual. In this instance it is possible that the moving snake mistook the sudden avoiding reaction of the quiescent one for the movement of prey, or of an enemy, and his aggression caused a defensive reaction resulting in the exchange of strikes fatal only to one.

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